OTC 8497

Joint Agency Cooperation to Ensure Safety and Protection of the Environment Through Pipeline Inspections

Theresa P. Bell and Catherine M. Hoffman, Minerals Management Service, and James B. Hart, California State Lands Commission

This paper was prepared for presentation at the 1997 Offshore Technology Conference held in Houston, Texas, 5–8 May 1997.

Abstract

The U.S. Department of the Interior, Minerals Management Service (MMS), in reviewing recent offshore pipeline inspection surveys, recognized the need for refinements that would benefit both industry and government while ensuring safety and protection of the environment. Realizing that other federal, state, and local agencies have different inspection requirements on the same pipelines, the MMS invited interested agencies to participate in a technical workgroup to review existing federal and state agency requirements for inspections of pipelines on the Pacific Outer Continental Shelf. The Pipeline Inspection Quality Improvement Team (PIQIT), comprised of representatives from the MMS, California State Lands Commission (CSLC), California State Fire Marshal (CSFM), and California Division of Oil, Gas, and Geothermal Resources (DOGGR), convened in Spring of 1994. The CSFM acted as the representative for the U.S. Department of Transportation (DOT). After extensive evaluation of existing inspection requirements, the PIQIT concluded that the best approach to inspecting offshore pipelines is to critically examine each line individually and develop a performance based inspection schedule for each based on the present condition of the line. The Offshore California Pipeline Inspection Survey (OCPIS) Plan was developed by the PIQIT to provide guidelines to improve the quality of pipeline inspection surveys.

The OCPIS Plan is a consensus-based, decisionmaking process intended to provide user agencies with an analytical framework for assessing the present condition and inspection needs of offshore pipelines. Implementation of the OCPIS Plan will permit pipeline operators to develop inspection strategies that are tailored to the needs of individual lines based on the actual condition of the pipeline. Requiring operators to conduct the most beneficial surveys based on the actual condition of the line will improve pipeline safety and reduce the risk of failure while affording industry an opportunity to reduce survey costs as a benefit of diligent and innovative inspection and maintenance.

The paper focuses on the OCPIS Plan, the implementation of the OCPIS Plan, the development of a Memorandum of Agreement between the PIQIT agencies, and updating external pipeline inspection requirements and guidelines. The paper also focuses on the cooperative nature of this effort and the advantages provided by this level of cooperation.

Introduction

In Spring of 1994, the Minerals Management Service (MMS), Pacific OCS Region (POCSR) initiated an interagency review of pipeline inspection requirements. The Pipeline Inspection Quality Improvement Team (PIQIT), composed of representatives from the MMS, California State Lands Commission (CSLC), California State Fire Marshal (CSFM), and the California Division of Oil, Gas, and Geothermal Resources (DOGGR), was charged with the task of reviewing each agencies' pipeline inspection requirements and developing pipeline inspection guidelines that are consistent and non-duplicative. In particular, differing frequency requirements for some surveys are a source of concern for some pipeline opera-

tors who desire more uniformity in agency inspection requirements. The CSFM acted as the representative for the U.S. Department of Transportation (DOT).

After extensive evaluation of existing inspection requirements, the PIQIT concluded that the best approach to enhancing pipeline safety would be to abandon the traditional "one-size-fits-all" approach and adopt performance-based standards to ensure adequate inspection of pipelines. The Offshore California Pipeline Inspection Survey (OCPIS) was developed by the PIQIT to provide user agencies with an analytical framework for assessing the present condition and inspection needs of offshore pipelines. The OCPIS Plan facilitates coordination between agencies early in the process to identify issues and concerns and develop consensus on regulatory actions.

The OCPIS Plan encourages pipeline operators to develop pipeline inspection strategies specific to their individual pipelines and pipeline systems mindful that no offshore pipeline system can be comprehensively documented with any single inspection tool or technique.

PIQIT Agencies' Goals

At the outset, the PIQIT's goal was to standardize as much as possible the inspection requirements for offshore lines, which at that time varied considerably from agency to agency. After examining in great detail the many variables that influence survey methodology and frequency, the PIQIT determined that the principle factors influencing surveys tend to be line specific and do not conform well to prescriptive inspection requirements. Offshore pipeline operators will be asked to critically examine each of their lines and develop an inspection schedule based on the present condition and risk potential of the line for review and approval by the appropriate PIQIT agencies. In most cases, with the absence of an approved inspection schedule, the approperate agencies' existing policy and requirements have been serving as a default plan for POCSR lines. The uniform process eliminates the need for uniform regulations and related statutory revisions that might be required for implementation by some agencies. This approach achieves the other PIQIT agencies' goals of cooperation and ensuring safety.

The Offshore California Pipeline Inspection Survey (OCPIS) Plan

The **OCPIS Plan** process and procedures (described below and detailed in the checklists in figures 2-5) is a nine-step process to:

- streamline regulatory process for operators,
- identify agencies' issues and concerns,
- focus deliberations to resolve concerns,
- develop a partnership between agencies to exchange information and resolve differences through coordination with operators,
- develop alternative inspection or remediation proposals as needed,
- build consensus among agencies and
- make appropriate recommendations.

The **OCPIS Plan** flowchart (figure 1) and the decision checklist (figure 2) are utilized when considering each of the following proposed actions:

(1) An operator's proposed survey plan or request for a waiver from existing survey requirements;

(2) An agency's request for a change in current survey requirements; or

(3) An agency's requirement for an unscheduled inspection following an offshore incident or accident.

Once an action is initiated, either by an agency or an operator, a lead agency is identified. The lead agency examines the jurisdictional issues and regulatory requirements of each affected Federal, State, and local agency and determines if a joint review or consultation is needed. If coordination is necessary, the lead agency will inform all affected agencies of the pending action.

Using Checklist I (figure 3) as a guide, the lead agency gathers pertinent design, operational, inspection, repair, environmental, and other data and information from agencies' and operators' files. The evaluation of the pipeline through Checklist I is based on an analysis of eight general categories of information (containing 36 influential criteria) related to pipeline design, operation, inspection, maintenance, incident history, physical

environment, and other factors.

Individual criteria on Checklist I are relatively weighted as "primary", "secondary", or "non-applicable" depending on how much weight (or influence) should be placed on the factor in assessing internal and external survey methods and frequencies. The purpose of defining and weighting criteria was to provide an analytical basis for evaluating the integrity and inspection needs of offshore pipelines to assist in regulatory decisionmaking. However, the weight a user places on an individual criterion may be, in many cases, line and setting dependent. The user, utilizing sound engineering practices, must decide how much weight to place on a given criterion for a given situation or environment in reaching a decision.

The lead agency uses Checklist II (figure 4) to synthesize the information in Checklist I and assess the present condition of the line, the compliance history of the operator, and the potential for future pipeline failures.

Using Checklist III (figure 5) as a guide, the lead agency initiates an evaluation of the proposed action, either independently or jointly with the affected agencies, as appropriate. The agencies identify and attempt to resolve concerns relating to the pipeline evaluation, the proposed action or an alternative recommended action(s) through coordination with all parties including the operator. The agencies work towards achieving a consensus decision on the proposed action, if possible, and issue either joint or i-ndependent recommendations to their respective managements to approve or deny the proposed action (i.e, plan or waiver request) or to require an alternate inspection or remediation plan, as appropriate. The operator is subsequently notified in writing of the agency's(ies') decision(s).

Pipeline Evaluation Workshop

The PIQIT convened a table-top exercise in July and August, 1995, to test and refine the **OCPIS Plan** process and procedures. The PIQIT used an actual pipeline inspection waiver request as a test-case to assess the adequacy and utility of the **OCPIS Plan**. As part of the exercise, participants made a detailed evaluation of the integrity of the pipelines using the draft process and checklists as a guide.

Overall, the exercise demonstrated the usefulness of the **OCPIS Plan** process in evaluating the integrity of offshore pipelines and illustrated some areas that needed refinement. Those refinements were made.

Implementation of the OCPIS Plan

The **OCPIS Plan** is currently being implemented by the PIQIT agencies. The PIQIT agencies and the DOT are in the process of finalizing a Memorandum of Agreement (MOA) to jointly implement the **OCPIS Plan**. When this new MOA is signed and implemented it will:

- officially adopt and implement the **OCPIS Plan**,
- have the agencies review and update the **OCPIS Plan**,
- strive toward achieving consensus decisions between agencies,
- establish guidelines for the lead agency; and
- share information on offshore pipeline and pipeline studies.

The MMS has met with the Counties of Santa Barbara and Ventura and the City of Carpinteria to discuss the local government’s involvement in the process. There have been discussions on modifying the **OCPIS Plan** process to include those onshore portions of pipelines that come from Federal and State offshore facilities to onshore processing facilities. The MMS is currently reviewing this proposal.

Currently, the POCSR is in the process of updating its default inspection policy and finalizing its external survey requirements. The POCSR envisions that these requirements will be incorporated into a comprehensive Notice to Lessees on offshore pipeline inspections, as was recommended by the PIQIT.

One Case History

Recently, an operator in the POCSR requested to delay the internal pipeline inspections for 1 year. The operator wanted to synchronize the internal inspections for all the pipelines in the one pipeline system for their two platforms.

The MMS acted as the lead agency and was able to use the **OCPIS Plan** to evaluate the pipeline condition and

the waiver request with the other agencies involved. This pipeline system has permit conditions and regulatory requirements from five agencies: MMS, DOT, CSLC, County of Santa Barbara, and City of Carpinteria. Not all of these agencies were involved with the review of the waiver or the final decision because some of them were not impacted by way of permit conditions or regulatory requirements, but all were informed of the final decision.

The staffs of the agencies impacted by the waiver request were able to agree and presented their finding to management who then in-turn also agreed with the finding. Base on the finding, the operator was given two choices: (1) perform the inspections on schedule, or (2) delay and perform all the inspections for the pipeline system within 6 months. The operator chose the later and was pleased to be given a choice.

Conclusion

The **OCPIS Plan** has been implemented for the last year and been a useful tool in making consensus decisions between the agencies and local governments. The successful implementation of the **OCPIS Plan** presents a systematic approach to inspecting and evaluating offshore pipelines. It facilitates the development of uniform agency inspection requirements for individual pipelines and is especially helpful for pipeline segments that fall under multi-jurisdictions with the goal of all agencies of ensuring safety and protecting the environment.

Acknowledgments

The authors wish to thank the other members of the PIQIT: Richard Clingan (Team Leader) and John Smith, Minerals Management Service; Greg Pelka, California State Lands Commission; Robert Gorham, California State Fire Marshal; and Steve Fields, California Division of Oil, Gas, and Geothermal Resources for all their work and perseverance. The authors also wish to thank the management of our agencies for adopting the **OCPIS Plan** and our recommendations.

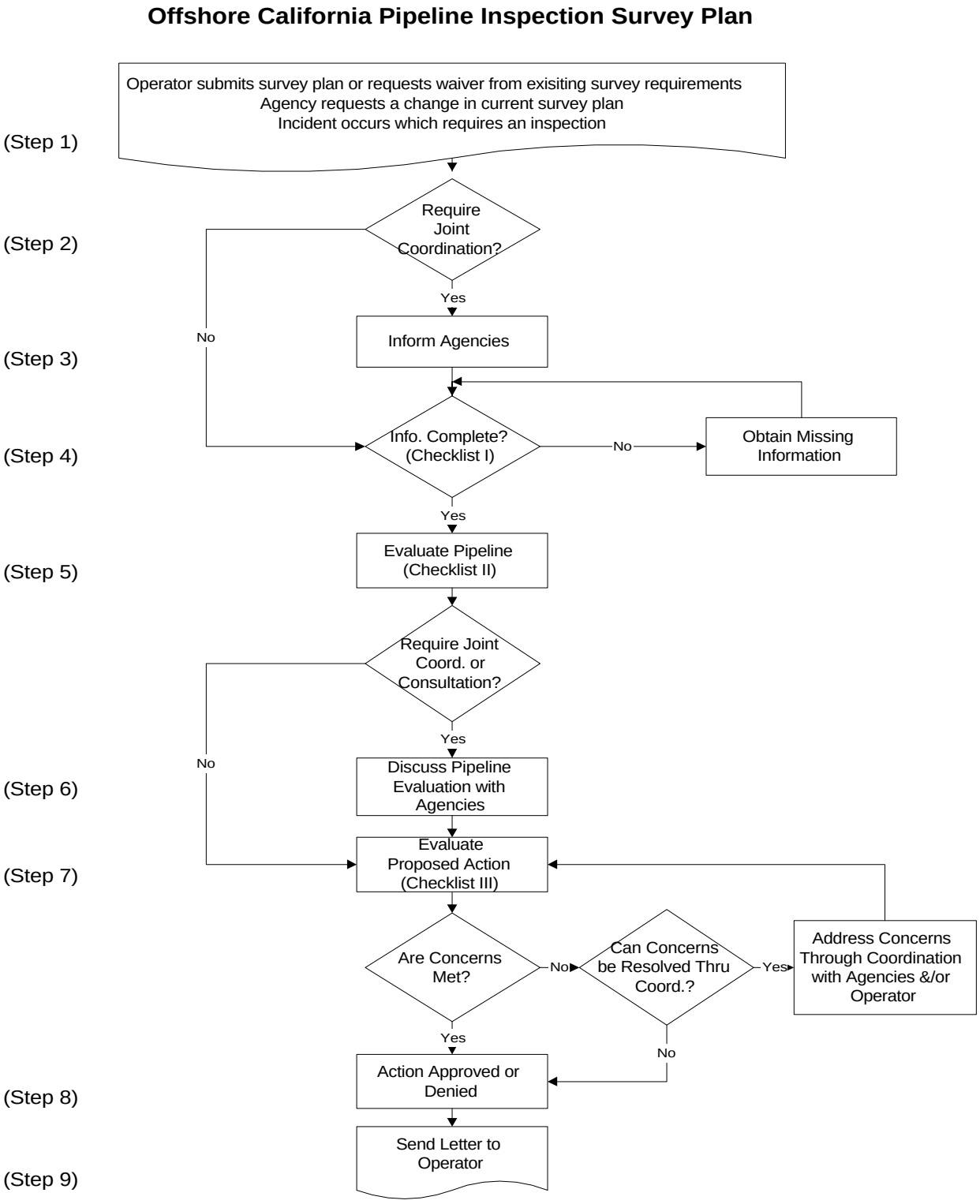

Fig. 1--Offshore California Pipeline Inspection Survey Plan flowchart

OFFSHORE CALIFORNIA PIPELINE INSPECTION SURVEY (OCPIS) PLAN DECISION CHECKLIST (For Figure 1)

STEP 1. Action identified that requires a decision: (check one)

Operator submits a survey plan . . . . . _____
Operator requests a waiver from current requirements . . . . . _____
Agency requests a change in current survey plan . . . . . _____
Pipeline incident requires an inspection . . . . . _____
- Describe: _____

STEP 2. Agency receiving or initiating action examines jurisdictional issues and regulatory requirements and determines if a joint review or consultation is required.

Agencies with inspection authority over the pipelines and their requirements _____
_____
_____
Conflicting jurisdictional requirements between agencies _____
___Lead agency(ies) _____
_____
Additional agencies needing notification _____
____Interagency agreements and conditions _____
_____

STEP 3. Lead agency informs affected agencies of pending action if decision process includes joint review or consultation.

Agencies contacted _____
___
Agencies requiring joint review _____
___

STEP 4. Lead agency compiles data and information for pipeline evaluation using "Offshore California Pipeline Evaluation Checklist I." (check)

Missing data and information obtained from operators . . . . . _____
Checklist I completed . . . . . _____

STEP 5. Lead agency evaluates pipeline using "Offshore California Pipeline Evaluation Checklists I & II." (check)

Checklist II completed . . . . . _____

STEP 6. Lead agency discusses pipeline evaluation with affected agencies if decision process includes joint review or consultation.

Agencies consulted _____
___

STEP 7. Lead agency evaluates the proposed action independently or jointly with affected agencies, as appropriate, using "Offshore California Pipeline Evaluation Checklist III." Agencies identify and attempt to resolve concerns through plan revisions. Plan revisions reevaluated to determine if concerns are adequately addressed. (check/explain)

Agency concerns _____
_____
_____- if concerns are resolved, go to Step 8 . . . . . _____
- if concerns may be resolved through coordination, attempt to resolve concerns . . . . . _____
- if concerns cannot be resolved through coordination, go to Step 8 . . . . . _____
Unresolved concerns _____
____Checklist III completed . . . . . _____
Final recommendation _____
___

STEP 8. The proposed action is approved or denied.

Action approved _____Conditions _____

___Action denied _____ Explain _____
_____Alternate plan or remediation _____
_____

STEP 9. Operator is notified in writing of agency(ies) decision. (check one)

Joint actions . . . . . _____
Independent action(s) . . . . . _____

Fig 2-Offshore California Pipeline Inspection Survey (OCPIS) Plan Decision Checklist

CHECKLIST I: OFFSHORE CALIFORNIA PIPELINE EVALUATION - DATA AND INFORMATION

	Criteria I/E
A. Pipe specifications:	
Diameter	P/N
Wall thickness	P/N
Process of Manufacture	P/N
Steel grade	P/N
Flange rating	P/N
Installation date	S/N
B. Operating conditions:	
Normal operating pressure	P/N
Maximum operating pressure (MAOP)	P/N
Flow rate	P/N
Product type and composition	P/S
% Water _____ % CO_2 _____ ppm H_2S _____ Other _____	
C. Environmental factors:	
Water depth	N/S
Geological/geotechnical conditions along route	N/S
Effects of currents on pipeline integrity	S/S
Proximity to environmentally sensitive habitats	S/P
D. Present pipeline characteristics:	
Is line smart piggable?	P/S
Types of internal corrosion controls	P/N
Type of cathodic protection	P/P
Type of external coating	S/P
Buried or exposed sections	S/P
Spanned sections	S/P
E. Inspection history:	
Date, results and quality of most recent:	
- internal inspection	P/S
- external inspection	N/P
- cathodic protection survey	N/P
- pressure test	P/N
Extent, location and rate of:	
- internal corrosion	P/N
- external corrosion	S/P
F. Maintenance history:	
Date, location and description of repairs:	
- leaks	P/P
- spans	P/P
- other safety deficiencies (specify)	P/P
- third party damage	P/P
What maintenance records are available?	P/P
Additional corrective and preventive maintenance	P/P

Criteria Key: P-primary, S-secondary, N-non-applicable, I-internal survey, E-external survey

Action :_____ Operator: _____ Pipeline:_____ Date: _____

G. Recent incidents:
Impacts on pipeline integrity from:
- seismic loads _____ S/P
- storm loads _____ S/P
- third party damage _____ S/P

H. Waiver history (explain): _____ S/S

Criteria Key: P-primary, S-secondary, N-non-applicable, I-internal survey, E-external survey

Fig. 3-Checklist I: Offshore California Pipeline Evaluation - Data and Information

CHECKLIST II: OFFSHORE CALIFORNIA PIPELINE EVALUATION - ANALYSIS AND CONCLUSIONS

A. Pipeline evaluation:
Present condition of the aggregate pipeline:
- Internal _____
- External _____

Present condition of the riser:
- Internal _____
- External _____

Problem areas identified in past inspections _____

B. Compliance history (waiver requests):
Operator's diligence in inspecting the line _____
Operator's diligence in maintaining the line _____

C. Risk assessment:
Identify potential for pipeline failure(s) due to each of the following (individually or collectively):
- internal corrosion _____
- external corrosion _____
- leaks _____
- spans _____
- third-party damage _____
- natural phenomena _____
- weight-coating damage _____
- operator non-compliance _____
- other: (specify) _____

Fig. 4-Checklist II: Offshore California Pipeline Evaluation - Analysis and Conclusions

CHECKLIST III: OFFSHORE CALIFORNIA PIPELINE EVALUATION - RECOMMENDATIONS

A. Identify action or incident: _____
B. Identify agency concerns: _____
Can concerns be resolved through coordination with agencies or operator? _____ If no, explain: _____
_____
Resolution: _____
C. Alternative actions:
Plan or waiver approved ____ Conditions of approval: _____
_____
Plan or waiver disapproved/denied _____ Explain: _____
_____
Alternate inspection plan recommended (explain): _____
_____

- internal inspection (smart pig, other): _____
- pressure test: _____
- external inspection (SSS, diver/ROV visual search, other): _____
- cathodic protection: _____
- no survey required: _____

Remediation recommended (explain): _____
- replacement, upgrade, or improvements: _____
- reduce operating pressure: _____
- other (specify): _____

D. Final Recommendation: _____

Fig. 5-Checklist III: Offshore California Pipeline Evaluation - Recommendations